PATENT

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This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously presented) A method for fingerprint authentication comprising:

a) acquiring an image of a fingertip of an individual;

b) processing the image to determine a value indicative of a physical parameter of the fingertip, wherein the physical parameter is a moisture condition of the fingertip and/or an applied pressure of the fingertip;

c) comparing the image to a stored biometric template, the comparison process being selected based on the determined value, the comparison process involving different image processing steps for different determined values; and

d) performing one of an authentication and a rejection in dependence upon the comparison.

2. (Canceled).

3. (Previously presented) A method for fingerprint authentication according to claim 1 wherein the determined value is quantitatively indicative of the physical parameter.

4. (Canceled).

5. (Previously presented) A method for fingerprint authentication according to claim 1 wherein the comparison process uses a biometric template selected in dependence upon the determined value, different biometric templates selected for different determined values.

6. (Canceled).

7. (Previously presented) A method for fingerprint authentication according to claim 5 wherein the comparison process includes:

c1) selecting an image-processing process in dependence upon the determined value;

c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein; and,

c3) comparing the processed image to the selected biometric template, wherein the biometric template is processed according to a same selected image-processing process prior to being selected for comparison.

8. (Previously presented) A method for fingerprint authentication according to claim 5 wherein the comparison process includes:

c1) selecting an image-processing process in dependence upon the determined value;

c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein;

c3) according to the selected image-processing process, processing the selected biometric template to remove a subset of features contained therein; and,

c4) comparing the processed image to the processed selected biometric template.

9. (Original) A method for fingerprint authentication according to claim 5 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with a moisture condition of the fingertip.

10. (Original) A method for fingerprint authentication according to claim 5 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with an applied pressure of the fingertip.

11. (Previously presented) A method for processing a fingerprint image comprising:

a) acquiring an image of a fingertip of an individual;

b) processing the acquired image to determine a value indicative of a physical parameter of the fingertip, wherein the physical parameter is a moisture condition of the fingertip and/or an applied pressure of the fingertip; and

c) selecting an image-processing process in dependence upon the determined value, the image-processing process involving different image processing steps for different determined values, the image-processing process for removing a subset of features of the acquired image.

12. (Canceled).

13. (Previously presented) A method for fingerprint authentication comprising:

a) acquiring an image of a fingertip of an individual;

b) processing the image to determine a value indicative of a physical parameter of the fingertip, the physical parameter affecting the acquired image and independent of the identity of the individual;

c) processing the acquired image according to a predetermined image-processing process to remove a subset of features from the acquired image, the predetermined image-processing process involving different image processing steps for different determined values;

d) selecting a biometric template in dependence upon the determined value, the biometric template processed according to the predetermined image-processing process;

e) comparing the processed acquired image to the biometric template; and,

f) performing one of an authentication and a rejection in dependence upon the comparison.

14. (Previously presented) A method for fingerprint authentication according to claim 13 including prior to a):

providing a plurality of biometric template images of a same fingertip, each biometric template image associated with a different predetermined physical parameter of a specific fingertip, the physical parameter affecting the acquired image and independent of the identity of the individual, wherein each biometric template image is processed according to the predetermined image processing process.

15. (Previously presented) A method for fingerprint authentication according to claim 14 wherein the determined physical parameter is a moisture condition of the fingertip.

16. (Previously presented) A method for fingerprint authentication according to claim 15 wherein providing a plurality of biometric template images of a same fingertip includes repeating for each predetermined moisture condition:

conditioning the fingertip to be in the predetermined moisture condition;

placing the conditioned fingertip onto a sensing surface; and,

capturing an image of the conditioned fingertip.

17. (Previously presented) A method for fingerprint authentication according to claim 14 wherein the determined physical parameter is an applied pressure of the fingertip.

18. (Previously presented) A method for fingerprint authentication according to claim 17 wherein providing a plurality of biometric template images of a same fingertip includes repeating for each predetermined applied pressure:

placing the fingertip onto a sensing surface using the predetermined applied pressure; and,

capturing an image of the fingertip.

19. (Previously presented) A system for fingerprint authentication comprising:

a sensing area for capturing an image of a fingertip of an individual presented thereto;

a memory storage area for storing captured images therein; and

a processor for executing code thereon to process the captured image to determine a value indicative of a physical parameter, wherein the physical parameter is a moisture condition of the fingertip and/or an applied pressure of the fingertip and to compare the captured image to a template image according to an image-processing process selected in dependence upon the determined value, the image-processing process involving different image processing steps for different determined values.

20. (Canceled).

21. (Previously presented) A system as in claim 19 wherein the determined value is quantitatively indicative of the physical parameter.

22. (Previously presented) A system as in claim 19 wherein the processor compares the captured image to the template image using a biometric template selected in dependence upon the determined value, different biometric templates selected for different determined values.

23. (Previously presented) A system as in claim 22 wherein the processor compares the captured image to the template image by performing the steps of:

selecting an image-processing process in dependence upon the determined value;

according to the selected image-processing process, processing the image to remove a subset of features contained therein; and

comparing the processed image to the selected biometric template, wherein the biometric template is processed according to a same selected image-processing process prior to being selected for comparison.

24. (Previously presented) A system as in claim 22 wherein the processor compares the captured image to the template image by performing the steps of:

selecting an image-processing process in dependence upon the determined value;

according to the selected image-processing process, processing the image to remove a subset of features contained therein;

according to the selected image-processing process, processing the selected biometric template to remove a subset of features contained therein; and

comparing the processed image to the processed selected biometric template.

25. (Previously presented) A system as in claim 22 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with a moisture condition of the fingertip.

26. (Previously presented) A system as in claim 22 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with an applied pressure of the fingertip.

27. (Previously presented) A system for fingerprint authentication comprising:

a sensing area for capturing an image of a fingertip of an individual presented thereto;

a memory storage area for storing captured images therein; and

a processor for executing code thereon to process the captured image to determine a value indicative of a physical parameter of the fingertip, the physical parameter affecting the acquired image and independent of the identity of the individual, the acquired image further being processed according to a predetermined image-processing process to remove a subset of features from the acquired image, the predetermined image-processing process involving different image processing steps for different determined values, the processor further selecting a biometric template in dependence upon the determined value, the biometric template processed according to the predetermined image-processing process, and the processor comparing the processed acquired image to the biometric template to perform one of an authentication and a rejection in dependence upon the comparison.

28. (Previously presented) A system as in claim 27 wherein said memory storage area includes a plurality of biometric template images of a same fingertip, each biometric template image associated with a different predetermined physical parameter of a specific fingertip, the physical parameter affecting the acquired image and independent of the identity of the individual, wherein each biometric template image is processed by the processor according to the predetermined image processing process.

29. (Previously presented) A system as in claim 28 wherein the determined physical parameter is a moisture condition of the fingertip.

30. (Previously presented) A system as in claim 28 wherein the determined physical parameter is an applied pressure of the fingertip.

31. (Previously presented) A method for fingerprint authentication comprising:

a) acquiring an image of a fingertip of an individual;

b) processing the image to determine a value indicative of a physical parameter of the fingertip, wherein the physical parameter is a moisture condition of the fingertip and/or an applied pressure of the fingertip;

c) comparing the image to a stored biometric template, the comparison process using a biometric template selected in dependence upon the determined value, different biometric templates selected for different determined values; and

d) performing one of an authentication and a rejection in dependence upon the comparison.

32. (Previously presented) A method as in claim 31 wherein the comparison process is selected based on the determined value, the comparison process involving different image processing steps for different determined values.

33. (Previously presented) A method as claim 32 wherein the determined value is quantitatively indicative of the physical parameter.

34. (Previously presented) A method as in claim 31 wherein the comparison process includes:

c1) selecting an image-processing process in dependence upon the determined value;

c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein; and,

c3) comparing the processed image to the selected biometric template, wherein the biometric template is processed according to a same selected image-processing process prior to being selected for comparison.

35. (Previously presented) A method as in claim 31 wherein the comparison process includes:

c1) selecting an image-processing process in dependence upon the determined value;

c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein;

c3) according to the selected image-processing process, processing the selected biometric template to remove a subset of features contained therein; and,

c4) comparing the processed image to the processed selected biometric template.

36. (Previously presented) A method as in claim 31 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with a moisture condition of the fingertip.

37. (Previously presented) A method as in claim 31 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with an applied pressure of the fingertip.

38. (Previously presented) A system for fingerprint authentication comprising:

a sensing area for capturing an image of a fingertip of an individual presented thereto;

a memory storage area for storing captured images therein; and

a processor for executing code thereon to process the captured image to determine a value indicative of a physical parameter, wherein the physical parameter is a moisture condition of the fingertip and/or an applied pressure of the fingertip and to compare the captured image to a biometric template selected in dependence upon the determined value, different biometric templates selected for different determined values.

39. (Previously presented) A system as in claim 38 wherein the comparison process performed by the processor is selected based on the determined value, the comparison process involving different image processing steps for different determined values.

40. (Previously presented) A system as in claim 39 wherein the determined value is quantitatively indicative of the physical parameter.

41. (Previously presented) A system as in claim 38 wherein the processor compares the captured image to the template image by performing the steps of:

selecting an image-processing process in dependence upon the determined value;

according to the selected image-processing process, processing the image to remove a subset of features contained therein; and

comparing the processed image to the selected biometric template, wherein the biometric template is processed according to a same selected image-processing process prior to being selected for comparison.

42. (Previously presented) A system as in claim 38 wherein the processor compares the captured image to the template image by performing the steps of:

selecting an image-processing process in dependence upon the determined value;

according to the selected image-processing process, processing the image to remove a subset of features contained therein;

according to the selected image-processing process, processing the selected biometric template to remove a subset of features contained therein; and

comparing the processed image to the processed selected biometric template.

43. (Previously presented) A system as in claim 38 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with a moisture condition of the fingertip.

44. (Previously presented) A system as in claim 38 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with an applied pressure of the fingertip.

45. (New) A computer readable medium having computer software for use in fingerprint authentication wherein an image of a fingertip of an individual is acquired, said software comprising:

computer executable instructions for processing the image to determine a value indicative of a physical parameter of the fingertip, wherein the physical parameter is a moisture condition of the fingertip and/or an applied pressure of the fingertip;

computer executable instructions for comparing the image to a stored biometric template, the comparison process being selected based on the determined value, the comparison process involving different image-processing steps for different determined values; and

computer executable instructions for performing one of an authentication and a rejection in dependence upon the comparison.

46. (New) Computer software for fingerprint authentication according to claim 45 wherein the determined value is quantitatively indicative of the physical parameter.

47. (New) Computer software for fingerprint authentication according to claim 45 wherein the comparison process uses a biometric template selected in dependence upon the determined value, different biometric templates selected for different determined values

48. (New) Computer software for fingerprint authentication according to claim 47 wherein the comparison process includes:

c1) selecting an image-processing process in dependence upon the determined value;

c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein; and,

c3) comparing the processed image to the selected biometric template, wherein the biometric template is processed according to a same selected image-processing process prior to being selected for comparison.

49. (New) Computer software for fingerprint authentication according to claim 47 wherein the comparison process includes:

c1) selecting an image-processing process in dependence upon the determined value;

c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein;

c3) according to the selected image-processing process, processing the selected biometric template to remove a subset of features contained therein; and,

c4) comparing the processed image to the processed selected biometric template.

50. (New) Computer software for fingerprint authentication according to claim 47 wherein the biometric templates are of the plurality of biometric templates stored in association with a moisture condition of the fingertip.

51. (New) Computer software for fingerprint authentication according to claim 47 wherein the biometric template is selected from a plurality of biometric templates, each biometric templates being of the plurality of biometric templates stored in association with an applied pressure of the fingertip.

52. (New) Computer readable medium having thereon computer software for processing a fingerprint image of a fingerprint of an individual, said computer software comprising:

computer executable instructions for processing the acquired image to determine a value indicative of a physical parameter of the fingertip, wherein the physical parameter is a moisture condition of the fingertip and/or an applied pressure of the fingertip and;

machine executable instructions for selecting an image process in dependence upon the determined value, the image-processing process involving different image-processing steps for different determined values, the image-processing process removing a subset of features of the acquired image.

53. (New) Computer readable medium having thereon computer software for fingerprint authentication of an image of a fingerprint of an individual, said computer software comprising:

computer executable instructions for processing the image to determine a value indicative of a physical parameter of the fingertip, the physical parameter affecting the acquired image and being independent of the identity of the individual;

computer executable instructions for processing the acquired image according to a predetermined image-processing process to remove a subset of features from the acquired image, the predetermined image-processing process involving different image processing steps for different determined values;

computer executable instructions for selecting a biometric template in dependence upon the determined value, the biometric template being processed according to the predetermined image-processing process;

computer executable instructions for comparing the process acquired image to the biometric template; and

computer executable instructions for performing one of an authentication and a rejection in dependence upon the comparison.

54. (New) Computer software for fingerprint authentication according to claim 53 including prior to a)

providing a plurality of biometric template images of a same fingertip, each biometric template image associated with a different predetermined physical parameter of a specific fingertip, the physical parameter affecting the acquired image and independent of the identity of the individual, wherein each biometric template image is processed according to the predetermined image processing process.

55. (New) Computer software for fingerprint authentication according to claim 53 wherein the determined physical parameter is a moisture condition of the fingertip.

56. (New) Computer software for fingerprint authentication according to claim 55 wherein providing a plurality of biometric template images of a same fingertip includes repeating for each predetermined moisture condition:

conditioning the fingertip to be in the predetermined moisture condition;

placing the conditioned fingertip onto a sensing surface; and,

capturing an image of the conditioned fingertip.

57. (New) Computer software for fingerprint authentication according to claim 54 wherein the determined physical parameter is an applied pressure of the fingertip.

58. (New) Computer software for fingerprint authentication according to claim 57 wherein providing a plurality of biometric template images of a same fingertip includes repeating for each predetermined applied pressure:

placing the fingertip onto a sensing surface using the predetermined applied pressure; and,

capturing an image of the fingertip.